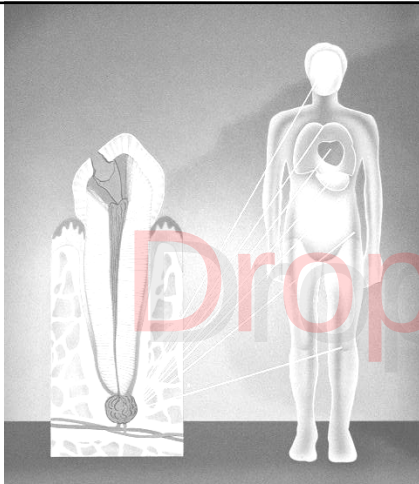


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Odontogenic Infections

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Dental
Infection
&
Systemic
Disorders



Outline

- ❖ Principles of Management of OI (Peterson)
- ❖ Definitive Treatment of Odontogenic Infections
 - Surgical Treatment
 - Supportive Therapy
 - Medical Therapy (Antibiotics)

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Learning Objectives

• Understand

Different methods of
Treatment of OI

• Identify

Appropriate method of
Treatment of each case

• Learn

Expected outcome & pitfalls
of management of OI

Items Discussed

1. Odontogenic & Non-Odontogenic Causes
2. Microbiology of Odontogenic Infection (OI)
3. Pathogenesis & Pathophysiology
4. Clinical Stages / Fate & Spread
5. Cardinal & Constitutional Signs & Symptoms
6. Dentoalveolar Abscess
7. Fascial space infections
8. Osteomyelitis

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Items Discussed

Natural History of H & N infections

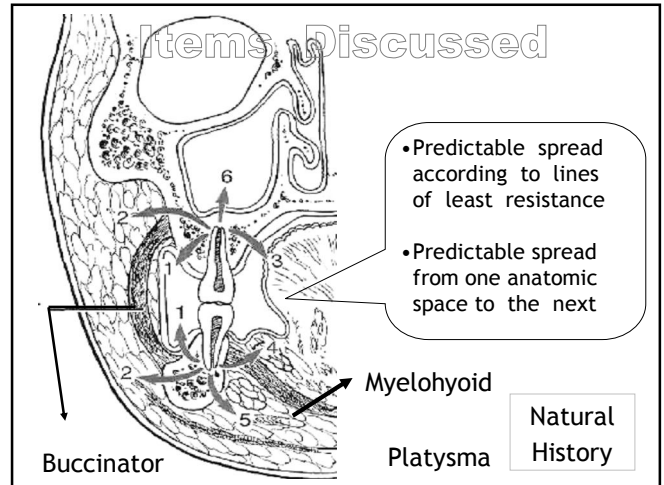
1. Inoculation / Edema / Periapical Osteitis

2. Cellulitis

3. Abscess formation

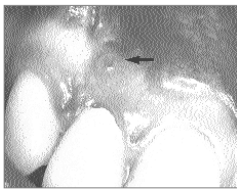
Predictable spread
from one anatomic
space to the next

* Resolution



Items Discussed

Natural History of H & N infections



Intraoral sinus



Extraoral sinus

Items Discussed

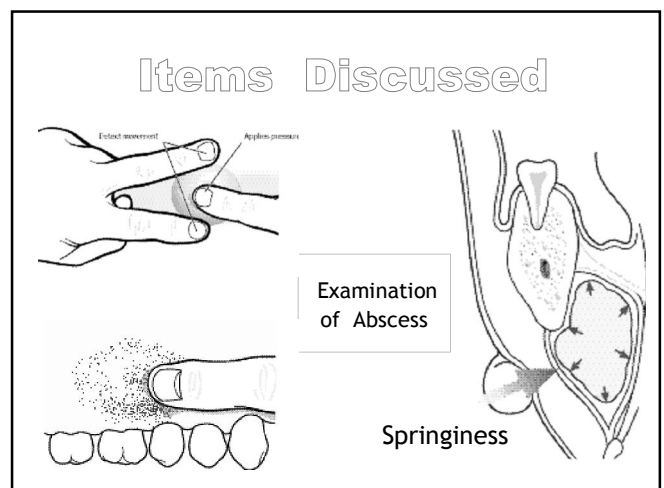
Cardinal Signs & Symptoms

1. Pain - Tenderness
2. Redness (Erythema)
3. Hotness
4. Swelling
Edema / Cellulitis / Purulence - Fluctuance
5. Loss of Function
Dysphagia / Trismus

Items Discussed

Constitutional Signs & Symptoms

1. Fever / Chills / 38 °C
2. Bacteremia / Toxemia
3. Septicemia
4. Malaise / Lethargy
5. Tachycardia
6. Leukocytosis > 10⁴/ml³
7. ESR elevated 30-70 mm/hr
8. Lymphadenitis (regional)
9. Headache / Dizziness
10. Loss of weight



Items Discussed

Periapical Infection / Inflammation involving tooth & its investing alveolar bone.

Stages of Periapical Abscess

Early stage
without soft tissue involvement

Late stage
with soft tissue involvement

Items Discussed

Characteristics

1. Swelling
2. Pain
3. Red / Hot
4. Systemic
5. Pus
6. LN
7. Trismus
8. X-Ray

Early

No- Elongation of tooth
Severe throbbing
Absent
Present
Absent
Enlarged, Soft, Tender
Absent
Widening of PDL space

Late

Subperiosteal Abs.
Subsides
Present
Present
Present
Lymphadenitis
Present
Interruption of LD
+/- Radiolucency

Items Discussed

Periapical Abscess

1. Widening of PDL space
2. Loss / Discontinuity of Lamina Dura
3. Loss of Trabecular structure of bone
4. Evident radiolucent lesion



Items Discussed

Periapical Abscess



Management of Infection

Aim of Management

1. Airway protection (Tracheotomy, ET intubation)
2. Removal of Odontogenic Cause of infection
3. Support patient's health status & immunity
4. Eliminate & drain all Toxic Purulent material
5. Enhance circulation, oxygenation, & healing
6. Select appropriate Antibiotic therapy
7. Prevent recurrence of infection

Principles of Management of OI (Peterson)

1. Case Evaluation: Determine Severity of Infection / Evaluate host Defense
2. Clinical Examination: Extraoral, Intraoral including dental, bone, Soft Tissue, & LN
3. Radiographic Examination: Panoramic, Occlusal, CT, MRI, & Scintigraphy
4. Laboratory Tests: Blood tests, & culture & sensitivity tests

Principles of Management of OI (Peterson)

5. Treatment planning: Indications for ER referral & / or Treatment by OMFS
6. Definitive Treatment: Surgical, Medical support, Antibiotics
7. Follow-up of patients for regular evaluation

Management of Infection

Basic Principles / Systematic Procedures

A- Case Evaluation

B- Treatment Plan

C- Definitive Treatment

D- Aftercare & Follow up

Management of Infection *Critical Situations*

Criteria of Referral to ER

Rapid Progressive Infection

Difficulty in Breathing

Difficulty in Swallowing

Fascial Space Infection

Fever

Trismus

Compromised Host Defenses

Management of Infection *Definitive Treatment*

Antibiotics

Supportive

Intervention
Surgical Drainage

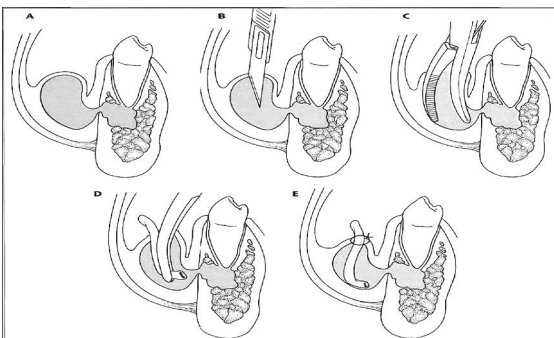
RCT

Apical Surgery

Ext.

I & D

Management of Infection *Incision & Drainage*



Management of Infection *Incision & Drainage*

- Aspiration of pus for C & S test
- Incision @ most Dependent area ~ 1 cm
- Blade no. 11 - Mucosa / Submucosa only unless Subperiosteal abscess
- Hemostat used to open abscess cavity

- Drain is inserted to prevent closure of abscess cavity
- Drain is sutured for 2-3 days

Management of Infection

Incision & Drainage

Principles of (Requirements) of Surgical I & D

1. LA : in non-infected area around abscess
2. Aspiration Biopsy: 18-gauge needle to detect pus accumulation & for C & S test
3. Incision: Blade no. 11 used for at least 1 cm
4. Incision: at most dependant position to encourage drainage by gravity
5. Incision: in esthetically acceptable area

Management of Infection

Incision & Drainage

Principles of (Requirements) of Surgical I & D

6. Blunt Dissection: hemostat inserted closed through tissues & opened @ depth to open all partitions of abscess, withdrawn opened
7. Irrigate: N Saline +/- Hydrogen peroxide
8. Placement of Drain: stabilized with sutures to maintain patency of wound
9. Follow up : every 24 hrs : Irrigation + drain

Management of Infection

Incision & Drainage

Surgical Drains

- A tube used to remove pus, blood or other fluids from wound & keeps incision line open for drainage

Types of drains:

- Passive drains: depend on gravity to remove fluid from wound. Soft flexible latex. e.g.. Penrose drain / Gauze
- Active drains: use negative-pressure system by compressible reservoir. It allows reliable measurement & assessment of drainage. e.g.. Jackson-Pratt Drain

Management of Infection

Incision & Drainage

Surgical Drains



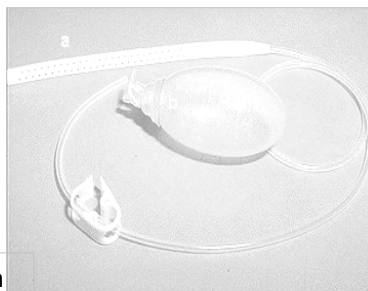
Penrose Drain

Plain, Corrugated, Tube, Fenestrated

Management of Infection

Incision & Drainage

Surgical Drains



Jackson-Pratt Drain Bulb drain (Hemovac)

Management of Infection

Incision & Drainage

Surgical Drains

- Drains discontinued when drainage ceases.
- Pus usually stops from surgically drained abscesses in 24 - 72 hrs, longer in cellulitis .
- Latex Penrose drains can be antigenic, & after few days they may cause exudation due to foreign body reaction alone.

Management of Infection

Supportive Therapy

1. Rest / Analgesics to control pain & fever
2. Hydration: Fluid intake to overcome Dehydration
3. High-caloric Nutritious Soft Diet
4. Nutritional Supplements: vitamins & minerals
5. Systemic diseases monitoring
6. Warm mouthwash / foment / Heat Therapy to promote healing after Fever subsides

Management of Infection

Principles of Antibiotic Therapy

1. Determine the Necessity for AB use
2. Use Empirical Therapy routinely
3. Use the Narrow Spectrum AB
4. Use AB with lowest incidence of Toxicity & SE
5. Use Bactericidal AB if possible
6. Administer AB Properly
7. Consider the Cost of entire AB therapy

Management of Infection

Indications of Antibiotic Therapy

1. Rapidly progressive swelling
2. Diffuse Cellulitis / Acute stage
3. Compromised host defenses
4. Involvement of fascial spaces
5. Severe Pericoronitis
6. Osteomyelitis

Management of Infection

Situation of no necessity for AB Therapy

1. Chronic well-localized DA abscess
2. Minor vestibular abscess
3. Dry socket
4. Mild Pericoronitis



In systemically free patient

Management of Infection

Antibiotic Groups

1. Penicillins: Penicillin V, Amoxicillin, Dicloxacillin
2. Cephalosporins: (Generations) Cephalexin, Cefadroxil
3. Macrolides: Erythromycin, Azithromycin
4. Anti-Anaerobe: Clindamycin, Metronidazole
5. Fluoroquinolones: Ciprofloxacin, Ofloxacin, Moxifloxacin
6. Others: Vancomycin
7. Sulphonamides & Aminoglycosides

Management of Infection

Antibiotic Therapy

Predictable Microorganisms - Empirical Therapy

- Penicillin / Amoxicillin + Metronidazole
 - Clindamycin
 - Cephalexin / Cefadroxil (immuno-compromised)
 - Amoxicillin + Clavulanate (inhibit β -Lactamase)
 - Dicloxacillin
 - Azithromycin
 - Moxifloxacin
 - Ceftazidime (cross blood-brain barrier)
- Severe, resistant cases
- 1st choice Outpatient
- 1st choice Inpatient
- Ensuring Patient Compliance

Management of Infection

Antibiotic Therapy

Predictable Microorganisms - Empirical Therapy

- ❖ All Antibiotics have the risk of pseudo-membranous colitis especially Clindamycin
- ❖ Erythromycin has high risk for drug interactions , stomach upset & cardiac problems
- ❖ Penicillin can develop allergic reaction that might be the anaphylactoid type

(Be cautious)

Management of Infection

Antibiotic Therapy

Indications for C & S Test

- Rapidly & Vigorously Spreading inf.
- Postoperative infection / Nosocomial Infections
- Non-responsive infection - Resistant strains
- Recurrent infection
- Compromised host defenses
- Osteomyelitis / Actinomycosis

Management of Infection

Antibiotic Therapy

General Guidelines for Antibiotic Administration

1. Proper dose

- MIC : minimal inhibitory concentration ,
Dose should be 4-5 times > MIC

2. Proper time interval

- PHL : serum elimination half-life of drug ,
Interval should be 4 times > PHL

Management of Infection

Antibiotic Therapy

General Guidelines for Antibiotic Administration

3. Adequate period for prescription

- Not less than 72 hours (3 Days)
- Continued for 2 - 3 days after infection has resolved , usually total of 6 - 7 days

Management of Infection

Antibiotic Therapy

General Guidelines for Antibiotic Administration

- 4. Proper route of administration (oral - parenteral) usually initial loading dose IV or IM then followed by oral D.

5. Combination Antibiotic therapy

Management of Infection

Reasons for Failure

- Wrong Diagnosis
- Inadequate Surgery
- Depressed Host defenses
- Presence of Foreign body
- Antibiotics problems :
 - Patient non-compliance
 - Too low dose
 - Wrong AB / Wrong Bacterial diagnosis
 - Drug not reaching site

Prevention of Infection

Prophylactic Antibiotic Therapy

Advantages

1. Prevent Wound inf. after surgery
2. Prevent Metastatic infection.
3. Prevent prolongation of illness in high risk

Disadvantages

1. Alter host flora
2. Useless in low risks
3. Encourage lax surgical technique
4. Cost of AB
5. Toxicity of AB

References

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